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SYSTEMS AND PROCEDURES QUARTERLY

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The Persevering Systems Man

PROBABLY the most frequent errors which can be charged to the systems man are those of omission rather than commission. He often fails to carry out all the improvements which appear proper, and which he is capable of making.

Perhaps the principal source of frustration for him are the vested interests which resent any intrusion that seems likely to expose their antiquated and wasteful practices. These may be encountered in any of the fields in which the systems man operates, but he should be especially watchful of those groups which are able to draw an aura of sanctity about their operations. Whenever the systems man finds that his questions are parried by technical or other brands of double talk, he may be quite certain that he has hit pay dirt. It is a natural human tendency to brag about our good deeds, and to be evasive about those which are not so good.

If, in spite of the obstacles which are strewn in his path, the systems man succeeds in bringing a wasteful practice to light, there are several ways of dealing with it. In the finest abstract sense the only proper course is to eliminate the waste and induce those affected to resort to reason in the conduct of their duties.

Before taking such incisive action, however, the more prudent course is to prognosticate the results. Is the game worth the candle? Will the savings justify the change? Will the resulting disaffection nullify the advantages? Are the affected parties too firmly entrenched to be budged from their position? Whether or not our systems man roots out the waste depends on his analysis of these factors. Let him not be naive enough to assume that he can promptly eradicate all antiquated practices which he sees.

Whatever course of action is elected, the systems man should tactfully let those affected know that he has discovered a wasteful practice and that he has some progressive views on how the situation could be improved. Sometimes they will quietly go about cleaning their own houses. But even if they evade the first attempt at reform, sooner or later they will give up protecting those practices when they learn that the systems man does not give up easily and will attempt to improve the operation even if it should take years.

Centralization vs. Decentralization

By J. Richard Hailock

ORGANIZATION is quite a widely discussed subject not only by people engaged in business, but those associated with clubs, churches, government and military groups are also concerned with good organization. It is quite an involved subject because it has so many ramifications. Therefore, I am going to try to confine this discussion to business organization and stick very closely to the announced subject "Centralization vs. Decentralization."

Why is organization so essential? In the first place, the aim of any organizational plan should be to develop a smooth functioning machine. This can only be done through: (a) delegation of authority and responsibility, (b) development of leadership in every phase of the organization, and (c) furnishing incentives and measuring sticks for proper determination of how well each individual's job is being done and giving credit for a job well done.

Secondly, no institution should be dependent upon a genius or superman to manage its affairs. Certainly this is especially true in the operation of a mass production business. Officers of a company, association, church or any other group are appointed to manage the affairs within their area of responsibility. They are expected to think and initiate and not just carry out orders.

Third, no institution can solve the problems of leadership unless it gives each leader a sense of duty—a sense of the importance of his trust—and a sense of mutual loyalty between himself and his associates.

Fourth, there must be a balance between local leadership and central management or between the head and his subordinates.

The subject "centralization vs. decentralization" has many various aspects about it that place it in the category of argumentative material. I don't propose to settle any issues today as to which type of organization is the best. I don't think there is any one best way to organize. There are many conditions which enter into the determination of whether or not an organization will become centralized. Just to mention a couple of these conditions we might list size, type of activity, the objective, and several others. There is also the human factor which we cannot overlook. By that I am thinking of the capacity of the top officer to handle and manage a great many varied activities of his subordinates. Good organization is quite often dependent upon adjusting the functions of management to the capabilities of the personnel that are available to perform the tasks.

When we speak of centralization, what do we mean? To centralize means to bring to a central point, to bring under one control or to concentrate. Let's list some of the advantages of centralization. The pamphlet, Business Organization, published by the Metropolitan Life Insurance Company lists six main advantages:

(1) Centralization of executive control facilitates the adoption and enforcement of uniform policies, and the coordination of the company's activities.

(2) Frequently it permits greater standardization and specialization with the attendant economies in operation and equipment.

(3) A unit's activities and responsibilities may be more clearly defined because of the degree of specialization possible, thus reducing the risk of duplication or overlapping of effort.

(4) There is a possibility of utilizing higher grade personnel in administrative capacities because of greater responsibilities resulting from concentration of functions.

(5) Greater flexibility in the utilization of personnel and facilities may be secured through a central unit.

(6) When general economic conditions are changing rapidly, centralization permits more rapid adjustments to change.

All of the advantages listed are certainly true and they are a fair evaluation of what can be gained through centralization. I believe all of these advantages are dependent upon having a forceful leader, a leader who exercises a strong influence over his subordinates. Once his influence and centralization force is relaxed there will probably be a tendency toward decentralization.

What do we mean by decentralization? Decentralization is obviously the opposite of centralization. It is a force causing movement away from the center. It re-

Centralization of the huge Ford Motor Co. organization had spawned these dangerous weaknesses: No budgets, no cost accounting—it was impossible to discover unprofitable areas; tools, processes, materials became highly specialized—peculiar to Ford. As industry standards gave way to Ford standards, Ford lost out on sources of supply. These were only a few of the faults remedied by decentralized control.

sembles the action caused by centrifugal force. There are two quite common concepts of decentralization.

To many people the term decentralization is defined as a geographical shift of industry to several widely divergent locations. The purpose of geographical decentralization is to equalize the industrial growth of the nation. Physical decentralization has been under way by several large corporations for some time.

The other phase of decentralization—the delegation of authority to operating activities—is the one that I wish to discuss today. E. R. Breech, executive vice-president of the Ford Motor Company, at a company meeting in 1947 described the term decentralization as follows: "We mean simply the dividing of a large business into a number of smaller businesses—by type of product or by type of operation—and managing each smaller unit on an independent basis. And we mean the delegation of authority to the *maximum*."

What are some of the advantages of decentralization?

(1) Through delegation of authority it is frequently possible to develop greater executive ability and initiative on the part of a greater number of individuals within the organization.

(2) A greater sense of responsibility for the all around success of an individual unit on the part of executives in charge may result.

(3) Opportunity for future growth may follow, without the need for further basic changes in organization. This point is very important in big business which ordinarily seems to be expanding and plowing back its earnings.

(4) The accuracy and promptness of decisions may be facilitated if local executives are authorized to act on their own initiative. This is a very strong point in favor of decentralization. Certainly the man on the scene is in a much better position to know the facts and to decide what action should be taken based on those facts.

(5) Executives of local units may establish closer contact with, and have more intimate knowledge of operating conditions in the locality. They also tend to develop greater local prestige.

(6) Centralization of records carried out too extensively may result in insufficient information for local management. If additional records are established locally, for local use there is risk of duplication of records and efforts. The local operator usually does establish some sort of records to protect himself from poor management practices and decisions.

As I have mentioned before, no one organizational plan will fit all situations. Many times by adopting a compromise plan, the advantages of both centralization and decentralization can be successfully employed. We must always develop an organizational plan around our objectives and the human facilities that are available.

To give point to my thesis, it was suggested that I speak briefly about the reorganization of the Ford Motor Company that has taken place during the past five years. Therefore, I will attempt to give you my impression of the program as it unfolded, and as it appeared to an employee of a newly organized operating division.

Probably all of you have read at least one newspaper article, magazine article or book about the change in command of the Ford Motor Company. There are many stories and very interesting ones about the late Henry Ford's resignation from the presidency, about the election of Henry Ford II to the presidency when he was still in his twenties. There are still more articles about how the company has decentralized. All in all the Ford Motor Company has received a great deal of publicity—due in part because the name Henry Ford is synonymous with the automotive business and mass production—because of the tremendous size of the company, and because of the rapidity with which the program was carried out. In reality it is very little different from the programs undertaken by many other large companies in the past few years.

Let me give you a brief description of the Ford Motor Company organization at the time Henry Ford II took over the presidency in September 1945. It was completely centralized as you will realize when I finish describing the manner in which it was organized:

(1) There was but one sales organization to direct and administer the sales of all of the company's products which included three passenger lines, trucks, tractors, parts, accessories and other items.

MR. HALLOCK, manager of the Organization & Methods Department, Lincoln-Mercury Division, Ford Motor Co., gave this paper at SPA's annual meeting late last year. He is a member of the Detroit chapter.

In other words, there was no special sales force to promote one particular line. Even the dealer organization was very general in nature and carried all product lines.

(2) The manufacturing of all products was the direct responsibility of the General Production Manager. Manufacturing facilities included the vast Detroit Area steel, glass, foundry, machining, stamping and many other diversified plants, outlying auto assembly plants, small community manufacturing plants, etc.

(3) Nearly all purchasing for this vast network of plants was centralized in Detroit. Central purchases included many small items which were available anywhere in the United States and could have been purchased locally.

(4) All bills were paid by the Central Accounting Activity. Nearly all record keeping was handled in Detroit.

Ford standards created

I could go on naming many other activities that were centralized to the same high degree. Because of this high state of centralization many of the tools, processes, materials, etc. became very highly specialized—to the extent that they were peculiar to the Ford Motor Company. Instead of using an industry standard, a Ford standard was created. The result was that normal tools of commonly known shelf items often were not used. Consequently, Ford could not rely on standard sources of supply, creating a procurement problem, a stores problem and sometimes a production problem.

In the vast Rouge Plant at Detroit which is truly a display of industrial might and a large physically centralized series of plants, there were miles of conveyors running through and between buildings. The system was so complex that it created severe problems in inventory, cost control, maintenance, etc. Summing it up in a few words it was a highly mechanized manufacturing operation producing steel, glass, plastics, machined parts, stampings and finished automobiles under the same production manager. To complicate the managing of this gigantic enterprise, there were no budgets, no cost accounting. It was not possible to identify profitable and unprofitable areas. Only the simplest form of bookkeeping was used to account for the funds of this billion-dollar business.

Along with the lack of adequate accounting records, there was a scarcity of statistical data upon which sound decisions could be made. The old management of the company just did not believe in keeping records. They considered records and any paperwork other than that required by law as unnecessary in the operation of the business. This was not something caused by centralization. I mention it in passing so that you will have a clearer picture of the conditions during the period when the company was highly centralized. Decisions were based on belief and not facts, since facts were a very scarce commodity. The net result was that sales, production and of course profits were on the decline.

In 1924 the Ford Motor Company, producing the Model T Ford, sold 50 per cent of all the automobiles sold by the industry. Just a little more than 20 years later Ford was selling less than 20 per cent of the industry total. The profit picture was equally bad. Instead of continuously producing at a profit, the company was making little or no money. It was even difficult to determine whether or not there was a profit because of the record system. Public acceptance of the products immediately following the war was not an encouraging picture. All in all the company operations had hit a new low.

In 1945 when Henry Ford II took over the leadership of the company, the conditions which I just mentioned were prevalent. It would have been a tremendous undertaking for a thoroughly experienced executive and certainly was a gigantic task for a young man in his twenties, to put it mildly. His first move was to surround himself with an experienced management team. A team with an equal amount of courage and determination to handle the job of rebuilding the company.

Reorganization commences

Once the brakes had been applied to the company's backward motion, the management team in 1947 launched a program to regain the leadership in the automotive industry that it had once enjoyed. In seeking to regain this leadership, the first requirement was that a completely new line of cars and trucks be produced equal or superior in quality, design and performance to those of competition. And these had to be built at a cost low enough to compete with others in their price class. It was necessary to have the productive capacity to meet competition. This meant building and buying new plants, and improving the operating efficiency of the existing plants. And when the new product was built, a dealer organization and a national advertising and mass selling program was needed to equal or excel competition.

All this required a tremendous amount of organizing. In addition to the policy and administrative phases of the company's management, it required the organization of staff and operating units covering every major company activity, such as Manufacturing, Purchasing, Sales, Advertising, Finance and Industrial Relations.

Once the broad objective of this newly formed company had been established and clarified, it developed a plan of organization which could conceivably meet these objectives. This organization planning was designed to do five things:

(1) Relieve top management of the burden of routine operations. Any organizational plan to be effective must be an orderly plan for delegating re-

sponsibility. Every executive must be free to devote the major portion of his time and energy to planning and programming the work of his activity and in coordinating his efforts with other executives in other fields.

(2) Provide executive controls. Every manager should have a means of reviewing and controlling all the activities under his jurisdiction.

(3) Clarify the functions of each unit of the organization and to define the responsibilities and authorities of the direction heads of the units.

(4) Provide each executive and supervisor with the necessary tools.

(5) Afford a means of measuring performance. Industrial performance is generally measured in terms of profit or loss. Thus a major requirement of an organizational plan is that operating activities be segregated so that the manager of each activity can conduct himself as the head of an independent operation, doing certain things or performing certain operations for which he expects to make a profit.

The above five points covered the basic organizational plan of the Ford Motor Company in 1947. The plan called for decentralization. I am certain that the task of straightening out the company could not have been accomplished with a centralized organization. The problem was much too big and too diversified to be licked by any other type of organization than a decentralized one.

Separate sales organization

The very first effort in this gigantic, well planned program of decentralization was in the formation of a separate sales organization to handle the sales of Lincoln and Mercury vehicles, parts and accessories. At the time the Lincoln-Mercury Division was formed it consisted mainly of a sales force. The first task of this new business was to develop a complete and separate dealer organization through which these products could be distributed. Immediately after World War II, as you will remember, everyone wanted a new car and price seemed to be no object. Naturally, there was plenty of capital itching to get one of these new dealerships. Fortunately for the Lincoln-Mercury Division, it was able to pick and choose from the best dealer prospects and that was the beginning of a sizeable sales organization that has done an outstanding job. Today that same organization is making its competition sit up and take notice.

After the sales organization was formed, accounting, traffic, manufacturing, production control and other personnel were assigned to the Lincoln-Mercury Division. The Division management took over the operation of the Lincoln plant in Detroit. It immediately started work on three new Lincoln-Mercury assembly plants. Engineering forces were simultaneously developing new post-war models.

In 1948, three new plants were completed and started producing three new post-war car lines with an organization that was completely new. This was only the beginning of the gigantic decentralization program that the Ford Motor Company had started. The rest of the company's decentralization program followed much the same pattern as the formation of the Lincoln-Mercury Division. Gradually the operating activities were taken from the central staff divisions as new operating divisions were formed. Today the Ford Motor Company has 16 separate operating divisions with their own staffs to assist the General Manager.

What were some of the problems that were created in the formation of this new operating division? Probably the most outstanding one was in the decentralization of operating responsibility or the delegation of authority. We are all reluctant to give up authority as was our central staff personnel during the early phases of the company's decentralization program, even though organization charts depicted a decentralized organization. For several months, we operated under a strong control from the central staff and probably rightfully so. Nevertheless, strong central control presented a real problem for Lincoln-Mercury management who had been delegated a wide responsibility with a very limited authority. In other words, true decentralization had not yet taken place.

The next phase that we went through was the establishment of controls. With the shift in responsibilities of central staff personnel from operating activities to those of providing advice and assistance, they had more time to analyze operations and suggest ways of improving them. As a result central staff personnel developed many procedures that were designed to establish effective local management controls. Many procedures were developed that required a vast amount of paperwork and were quite expensive. Nevertheless, the sums to be saved were far greater than the administrative costs involved in effecting the controls.

Incidentally, today we are taking an entirely different approach to that procedure problem. We are making more detailed studies of the problem and the reasons why we have a problem. We are doing a methods engineering job on each project at least as much as time will permit. We believe in tight controls—we believe in having those controls with a minimum of expense. Anyone can establish a system or write a procedure, but it is a good trick to set up a system that will improve a given situation at a very

(Continued on page 18)

Other papers given at the International Systems Meeting will be presented in future issues of the Quarterly.

Inventory-Taking —A Symposium presented by the Los Angeles chapter.

Preparing for Inventory

By Walter H. Barinoff

IF it were generally realized that inventories actually represent a form of cash flowing through the normal trading circuits and that they will finally resume the original form of cash, it is quite probable that the desirability and the necessity of tight control, careful record-keeping, and efficient inventory-taking would receive major attention and care. Every business man considers cash vital; he never hesitates to keep adequate records and to devote elaborate care to safeguarding his cash. Rarely is similar zeal manifested with respect to inventories and inventory-taking.

Regardless of the accounting system in vogue, a physical inventory must be taken of all items in stock at least once each year. It is just as necessary for the business man to do this as it is for him to count his cash, record his cash transactions, and reconcile his bank statements. It often becomes the task of the systems man to set up a procedure for inventory and inventory-taking which will provide a satisfactory means of internal control, will satisfy the requirements of management, and will contribute accurate facts for the financial statements. The systems man will first consider those aspects of inventory-taking which are common to all physical inventories and then turn his attention to those aspects which will vary with the business and attendant circumstances.

His first consideration, therefore, should be those aspects of inventory-taking which are common to all physical inventories. These are (1) the Inventory Program, (2) the Inventory-Taking Time, and (3) the Cut-Off.

The Inventory Program

Just as a bank would not entrust the counting and the recording of its cash and valuables to other than trustworthy and competent personnel operating in conformance with a management-approved procedure, so should the physical inventory-taking be looked upon as a task calling for integrity, serious application, and painstaking care. To that end, the work should be rigidly supervised and, in any organization where inventories are of ranking importance, explicit instructions in writing should be issued to govern the process. Careful preparation for the inventory will materially shorten the time required, lower the cost of taking the inventory, and will increase the accuracy of the work.

The Inventory Program should be conceived well in advance of the inventory-taking date. It should cover all points necessary to achieve a precise, simple, and rapid physical inventory-taking. It should allocate responsibilities, be approved by management, be reviewed with the personnel involved, and should of course provide for proper and adequate personnel, equipment, and supplies. Last, but not least, the Inventory Program should be reviewed with the outside auditors.

The Inventory-Taking Time

The advantages of taking physical inventory when stocks are at their lowest ebb are well explained in the pamphlet "Why Close Your Books at December 31?" published by the California Society of Certified Public Accountants. Despite the fact that the company may prefer to close its books on December 31st rather than at the close of its natural business year, inventory-taking can —and should be—done, wherever possible, when stocks are at their lowest.

With smaller inventories the work of taking, pricing, and verifying inventories is reduced considerably. It also helps to relieve that well known year-end bottle-neck and enables the auditors to spend less time on inventory verification and more time on other important auditing tests. As a result, firms which formerly shut down a few days for inventory-taking at the year-end now find that inventory can be taken without disrupting or stopping their normal business operations.

The Cut-Off

In determining what to include in and what to exclude from inventory, a definite cut-off or deadline should be established and rigidly adhered to. After that date no materials which are received may be included in the inventory and no goods which are shipped may be deducted. Moreover, no recognition may be given to additional work on goods in process nor may any raw material be moved into process. In other words, the condition at the cut-off date is definitely and clearly "frozen" and must be so maintained. It is of paramount importance that this "cut-off segregation" of goods received and shipped harmonize with, be matched with, and parallel the accounting distribution of the documents covering these goods. The improper distribution of an accounting document or the improper inclusion or exclusion of a

Four speakers at the December meeting of the Los Angeles Chapter of SPA were Walter Barinoff, C.P.A., Chief Cost and Methods Accountant for Lane-Wells Co.; Oliver W. Watters, M. Jackman & Sons; Harold F. Campbell, General Petroleum Corp., and H. B. Mills, Harry B. Mills & Co. Their papers on inventory problems are reproduced here.

receipt or shipment of goods can substantially distort an otherwise perfectly good and precise physical inventory.

Variable factors and important factors in determining the most efficient way to prepare for an inventory are:

(1) Is this a "first" or a "repeat" inventory? The program for a first inventory must be comprehensive and must be spelled out to grass-roots details. In a "repeat" inventory, the program for the previous inventory must be studied and all the comments, suggestions, and criticisms must be considered in the light of improving the forthcoming inventory.

(2) The type of accounting system in vogue must be considered. Perpetual inventory records and a job order cost accounting system, if they exist, will greatly assist in the inventory-taking and will enhance the accuracy of the quantities tallied and the valuation placed on goods in process.

(3) The type of inventory-taking will influence the program whether it be periodic, staggered, cycle, or a year-end inventory.

(4) The type of goods will have a great bearing. The variety, volume, kind, and the units are all important determinants.

(5) With some concerns, the geographical location of their inventories and the attendant circumstances dictate aspects of their best method of taking inventory.

Forms and Devices

By Oliver W. Watters

SOME FORMS that relate to inventory-taking are: (a) price records used in pricing or costing the inventory, (b) stock records used for checking and posting the new figures, and (c) inventory sheets used for final listing.

The inventory tag is the central form around which most of the work revolves. It should be designed carefully: (a) spaces should be provided for all important information, (b) spaces should be large enough to allow for writing without crowding, (c) tag should be so arranged that information follows in a logical sequence, and (d) terminology should be easily understood.

The usual procedure for inventory tags is to have serially numbered tags with corresponding serially numbered stubs. The inventory is taken and recorded on the tags. After checks and test audits are made, the tags are pulled and accounted for by serial number. The stubs remain with the inventoried material and are used to help locate any missing tags.

The following mechanical devices are sometimes used: (a) tape or wire recorders to speed the physical taking of the inventory by allowing the transcribing and writing to be done at a later time, (b) intercommunication phones from the inventory takers to the stock record clerks so that the book records can be checked and adjusted while the actual physical count is being made, and (c) tabulating machine equipment to account automatically for all tags and to do the sorting, listing, and adding operations mechanically.

A device or method known as "Digiting" can be used to calculate the total value of an entire inventory accurately without making any multiplications. To accomplish this, the inventory tags are sorted on the units position of quantity with the nines first, then the eights, then the sevens, etc. The prices of all the nines are added and a sub-total taken on the adding machine; then all eights are added and another sub-total taken; etc.; etc. The sub-totals keep building up, and are not cleared from the machine until the prices have been added for all digits. A total now obtained by running a tape of the sub-totals gives the grand total computed value for the units position. (This is true because the total of the nines has also been included in the eight succeeding sub-totals, and the total of the eights has also been included in the seven succeeding sub-totals, etc.) The same procedure is repeated for the tens position of quantity, and then for the hundreds position, etc.

This method is fast and accurate for getting the total value of an inventory consisting of many different items. However, since no individual extensions are obtained, analysis of the inventory might be more difficult, and this factor should be seriously considered in weighing the advantages to be obtained. (*Continued on next page*)

The Systems Man in the Inventory Procedure

By Harold F. Campbell

IN HIS BOOK *Systems Analysis for Effective Administration* published in 1951, Norman Barish, in answering the question "What will the systems technique accomplish?" lists among other things: "Reduction of the clerical cost of performing the coordinating, control, and service functions required in the enterprise by prescribing the best motion patterns, by proper layout and equipment, by eliminating unnecessary practices, reports, and records, and by simplifying and combining the required ones."

The reader will agree that the systems man's responsibility and function in the inventory procedure is multiple. He has a great deal of responsibility, although he may not have any authority. First, he should see that year-end inventories are abolished. They are as obsolete as month-end statements. Taking of inventories should be a year round, continuous operation—daily, weekly, monthly, quarterly—whatever is required for effective control.

Second, it may be necessary to determine who takes the inventory, and to tie in the inventory operation with other functions. If the Auditing Department wants a physicial inventory, it may be advisable to let them take it and then use their inventory for accounting and operating purposes. Do not duplicate the function. If conditions warrant, assign a unit to the inventory, especially if this additional internal control is desirable. Also, tie in with the Inventory Control program of the company.

Third, inventory forms and devices obviously come under the systems man's responsibility because forms design, equipment, and the control of each are usually the first assignment of a new Systems Department. It is sometimes their last assignment, especially if they lack the ingenuity necessary to broaden the scope of their effort.

Fourth, the inventory procedure and requirements should be manualized to eliminate any doubt as to responsibility and authority of persons taking the inventory. The procedure will provide stock numbers for quick, positive identification of items, and also will provide that consigned, expensed, and stock items will not be commingled.

Fifth, observe the taking of inventory. See what the problems are and correct them.

Cooperation with Outside Auditors

By H. B. Mills

IT IS assumed that the "inventories" under consideration include all materials or commodities for resale and all materials in various stages of production from raw materials to completed products, and that they exclude other types of inventories frequently found on financial statements. It is also assumed that the auditor's interest in these inventories, for the purpose of this discussion, is confined to his requirements for audit purposes.

The outside auditor, or public accountant, in making an audit is concerned primarily with the valuations placed upon the physical units properly included in the inventories under examination. Theoretically, at least, he is not required to establish valuations. He merely makes certain investigations and examinations, which are intended to make it possible for him to express an opinion with respect to the valuations established by the client. With this in mind, the company staff can best cooperate with the outside auditor by: *First*: Establishing valuations entirely satisfactory for financial statement purposes and *Second*: Developing and making available to the auditor suitable evidence to prove that the inventory valuations, as established, are in fact satisfactory for financial statement purposes.

These two objectives require the development of policies and related procedures to control (a) the physical count of the items, or units, comprising the inventory, (b) the basis used to price or otherwise value the physical units, and (c) the clerical accuracy of the compilation of the inventory sheets. It is not always done, but it is certainly desirable that these policies and procedures be clearly stated in writing, not entirely for the benefit of the auditor but more particularly that satisfactory valuations may be obtained. The recorded inventory policies and procedures provide important evidence with which the auditor is vitally concerned. It is desirable that he point out any weaknesses that may result in a qualification of his opinion, as expressed in his audit certificate, or report.

Satisfactory inventory policies and procedures will result in suitable inventory valuations only if the established

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New Horizons with Telegraph Transmission Techniques

Hitting the high spots in the past, present and future of telegraph communications

By G. A. Trapp

(First of Two Installments)

WHEN the electric magnetic telegraph was first placed in operation in 1844, the apparatus used was a printing machine, cumbersome, unwieldy and very slow. After a while, about 1856, the operators learned that the signals being received could be divided audibly into dots and dashes, which put together, formed the matter, words and figures being transmitted. It was not too long thereafter that the Morse operator came into being.

Western Union just recently celebrated its centennial and for perhaps seventy-five years of that first century very much the larger percentage of its messages was handled by the Morse method. Now, Morse was and still is romantic and extremely fascinating, but communication by that method has certain limitations. While operation is relatively simple, considerable time is required to develop the skill of an operator requisite to working a circuit competently and speedily. Then, too, Morse lacked and still lacks the means of relaying messages except manually, a process that is at once costly and time-consuming.

The first telegraph was conceived and operated as a small semi-automatic device. Messages were received on paper tape—not by sound. Telegraphy has completed a full cycle since those early Morse days. Today, modern telegraphic equipment is in the main automatic. The received messages are again automatically recorded on paper tape, and in printed form.

The multiplex system introduced in 1915, permits the transmission of as many as eight messages simultaneously over one wire, four in each direction, at high speed. The multiplex system is used on lines between important centers where traffic is heavy and constant.

Also in 1915, Bell System engineers, who had been experimenting for some time with a form of printing telegraph, now called the teletype system, established for a press association a service reaching three New York papers and three others in nearby cities. The following year, the first commercial service was inaugurated, over circuits from New York to Chicago and Kansas City.

The teleprinter was placed in general use by the telegraph companies over short distances in the 1920's. The program developed rapidly along three major lines: (1) Conversion from Morse and telephone methods of transmitting and receiving messages to printer between main traffic departments and branch offices in the same cities or smaller nearby cities, (2) providing printers to customers for originating and terminating public message traffic, and (3) use of printers on privately leased facilities, that is, rental of wires and associated apparatus to customers for their exclusive use.

It might be well to mention that by printer operation I mean any of the variously termed Teleprinter, Teletype, Simplex or page-type of machine used in the written communication field. As all produce fundamentally the same effect, I shall for the sake of simplicity and consistency, continue to refer to "printers."

While, as I stated previously, printers have been in use for quite a number of years, it is only within the past fifteen or twenty years that impetus has been given to wide-spread private telegraph systems based on printer operation. Considerable acceleration was given privately operated systems by the inauguration, in 1931, of the "TWX" Teletype Exchange Service of the American Telephone and Telegraph Company. This enabled subscribers to the service to be switched from one to another in much the same manner as connections are made at exchanges for local and long distance telephone calls.

Also aiding in the dissolution of the mysterious Morse, was the program of the commercial telegraph companies in providing printers in customers' offices for the transmission and reception of message traffic. All of these installations and the resultant operation thereof produced and developed a distinct consciousness of the important part that written or recorded communications plays in the

conduct of modern business. Yester-year, the telegraph was considered an evil, sometimes necessary, but at all times, a target for producing economies when retrenchments were in order. The record communication is now recognized as a binding force in business and instead of telegraph departments being placed under stairways, behind bulkheads, or relegated as far from sight as possible, they now occupy premises of prominence and beauty.

Thousands of systems

Today, thousands upon thousands of business organizations employ private leased wire systems of greater or less magnitude. Some are only two-point, that is, from one city to another, or printer-to-printer in local plants or offices, while others have tremendous scope, nation-wide in character. We all know that business today is exceedingly complex, and the complications have not been lessened by governmental decrees, directives, allocations, price controls and so forth; nor by the indisputable trend towards decentralization. Because of these factors and because of new techniques of manufacture and the scattered locations of plants and offices, firms, large and small, have been forced to provide means of communication by which they have hour-to-hour, day-to-day supervision and executive control. The change in the competitive picture has complicated the problem because management has found it necessary to transport markets "next door" so to speak, for effective competitive operation. Privately leased wire facilities and associated apparatus provide the means of keeping a finger on the corporate pulse.

I previously mentioned that Morse operation lacked the means of handling relay message traffic except manually. Automatic operation has overcome this factor through application of what is known as re-perforator switching or relaying.

Re-perforator switching, as its name implies, provides a method of operation which eliminates the manual relaying of messages with resultant improved service and reduction of labor cost; all messages that require relaying are received on printer-perforators which produce a printed message on a perforated tape to be used in transmitting the messages to their destinations, the various circuits being connected to the proper automatic apparatus by means of switching devices.

Western Union, having spent considerable time and money in developing the re-perforator switching system, has a number of its own and patron installations in actual service and is pre-eminent in this field.

In re-perforator switching, each originating message is typed or punched on a printer but once, and flows throughout the system without any further typing, all relaying being done through the medium of perforated tape.

Whatever information is put into the originating message is reproduced at the receiving and exactly in the form in which it was transmitted, tabulated, columnized, paragraphed, etc.

The use of printer-perforator switching requires at least two important pieces of special apparatus, namely, the printer-perforator and the automatic numbering machine. The printer-perforator makes it possible for any one to read the incoming perforated tape in plain type and thus quickly identify the beginning and end of each message as well as its destination. The automatic numbering machine provides numerical sequence on all messages sent over circuits controlled by re-perforator transmitters. It is essential that such a sequence be maintained if the danger of lost messages due to an unobserved circuit or equipment failure is to be avoided.

Semi-automatic rather than full automatic switching is used in Western Union re-perforator patron switching systems because experience gained over the past fifteen years with re-perforator switching in large patron installations where all relay operations are so handled, has shown the imperative necessity for intelligent supervision at the switching or relay center.

How relaying works

When a message is received from a tributary office or drop, as we call it, it is received on the perforated tape, as previously stated. The switching attendant observes the destination of the message, and by depressing a push-button associated only with the office of destination, transmits or relays the message onward to its destination. If the office of destination is served through another relay office or center, then the push button of the second relay center is depressed and the message is relayed to this other relay center. At that point, the process referred to above is gone through with.

In addition to many hundreds of relatively small private wire installations, embracing a large cross section of business activity, we have quite a number of really gigantic systems presently in service—General Electric Company, Kaiser Companies, United States Steel Company, Sears Roebuck & Company, The Bank Wire System, United Air Lines, Federal Reserve Bank, and the latest to be installed—that of the U. S. Air Force.

Private wire systems are originally engineered and designed for a certain volume of wordage, but in every case of which I have knowledge, it has been necessary to expand and amplify facilities and apparatus simply because the good product and the good service thus achieved has sold itself and has caused greater use of the facility than had originally been contemplated.

A feature of the re-perforator system is the master-

send function. This is the "book" or multiple-address feature whereby a message may be transmitted simultaneously to a pre-determined number of destinations from the one incoming perforated tape. When the outside office has a message that is to be sent to say ten different destinations, it is transmitted to the relay center where it is received on one perforated tape with the destinations signalled thereon. At the center it is switched to the master-send position where it is received on a perforated tape and where the pattern of the destinations is set up on the push-button panel, by depressing the push-buttons of the offices or stations to which the message is destined. When the pattern has thus been set up and checked, one button, the start button is depressed and transmission is made simultaneously to the ten offices concerned. A copy of the message sent is produced on a separate printer in the center together with a sequential message number, applied automatically, for each station.

One large private wire installation is that known as the "Bank Wire" sponsored by a group of New York and Chicago banks in cooperation with banks throughout the country, this system connects some 185 banks in 54 cities of the United States through five relay centers located in New York, Chicago, Atlanta, Dallas and San Francisco. This project expedites banking transactions throughout the country and thereby provides new and improved services which will be beneficial both to the banks and their customers.

Privacy maintained

In order to insure the confidential nature of communications on the wire, the Bank Wire Committee arranged with Western Union to operate and maintain the switching centers entirely with Western Union employees—at a price, of course. Regardless of the number of banks in the system, each will receive its own messages without having access to the messages of others.

In commenting on this private wire system, a spokesman for the banks declared, "It is doubtful whether anyone can now visualize the ultimate possibilities of the Bank Wire in variety of use and benefits to the respective banks and their customers. Some uses are rather obvious, such as money transfers on a bank-to-bank basis or for the account of third parties; security purchases, sales and quotations; credit inquiries and information; foreign exchange; letters of credit and other foreign department business; reports of payment or nonpayment on collection and cash items; advices of all kinds, etc. Additional uses within the tariff regulations are limited only by the scope of the banking business and the imagination of the banks in taking full advantage of the facilities."

The latest push-button system to be installed is that of the U. S. Air Force, which now comprises 195 service stations, or drops, at a total of 113 points, through five switching centers—Washington, D. C.; Dayton, Ohio; Montgomery, Ala.; Fort Worth, Texas, and Sacramento, Calif. There are 149,000 circuit miles in this system, operating 24 hours a day, seven days a week.

Prior to the installation of the push-button system, which was placed in operation in February 1951, 28 relay centers were required, communications took several hours because of the many persons and relays necessary to handle messages to multiple addresses. Since a large percentage of all telegrams handled over the Air Force Communications network are multiple-address messages, the master sending feature of the push-button system to which I referred previously, is of major importance. Up to nine messages may be so handled in the Air Force system, that figure having been set arbitrarily; if more than nine addresses is involved, another multiple addressed message would be necessary. It has been said that installation of the five push-button relay centers has resulted in a saving of 400 in personnel and an estimated annual saving of over $1,000,000.

Another feature of the Air Force system is the provision for messages having a two-station termination, that is, destined to only two stations. This is known as "dual" operation. A message from a tributary out-station is received in the relay center and is switched to two printer-perforator positions, instead of one. At the dual terminating position, one message is push-buttoned to one destination from one of the two perforator positions, and the other message switched from the second of the perforator positions, individually or simultaneously. A refinement of this principle provides for a three-station termination with switching functions as described under dual handling.

As the headquarters of the Air Materiel Command of the Air Force is located at Wright Patterson Air Force Base in Dayton, close check must be maintained on all items of apparatus, equipment, parts, statistical control, etc. There are great numbers of these items and in order to meet exacting requirements of replacement of one description or another, and at times with the greatest of speed, a large number of I.B.M. machines is necessary. In addition to the normal functions of this I.B.M. installation, much of the data is compiled from wire advices. These messages are received in the center and are switched to the communications center immediately next door at Dayton. There they are received on perforated tapes and are sent through automatic transmitters to a local printer where a copy of the message is obtained, then both the "hard" copy as it is termed and the perforated tape are dispatched to the I.B.M. section. At this section, tape, after the necessary pattern has been established, is run through the transmitter associated with the card punching func-

(*Continued on page 18*)

MR. TRAPP is division manager, Private Wire Services, Western Union.

What Small Business Should Do about Manuals and Methods

By Louis J. Kroeger

ALTHOUGH I am to talk about the problem of small businesses, the first experience was at the other end of the scale—in the Government of the United States. During most of the last war, I was concerned with the planning and installation of the procedures by which thirteen different rationing programs were administered. Four times during World War II virtually every man, woman and child in this country was issued a war ration book. You can best appreciate the magnitude of that job when I tell you that the printing of one order of war ration books consumed 126 carloads of paper.

These books were issued simultaneously at about 23,000 locations. It was therefore essential that procedures be carefully planned and simply described, so that several hundred thousand volunteer workers would issue them the same way. The importance of planning this procedure down to the last flip of the wrist was impressed on us when someone figured out that for every ten seconds added to the procedure for issuing each book, it was necessary to recruit an additional 15,000 people to do the work of getting out the books in the three days we had for the task. With manpower shortages, and having to rely on volunteer help, any such staggering increase in the personnel required by such a minute difference in the time for handling a piece of paper could not help but convert us all to the need for carefully planned and clearly written procedures.

You may wonder why I use this illustration to preface a discussion of the procedure problems of small businesses. I do so merely because on the scale I've been discussing the figures are impressive, yet they are nothing more than the effect you would get from a magnifying glass held to the same kind of a problem in a small business. We are too prone in our small businesses to consider the piece of paper or the ten seconds spent in processing it as a minor matter. We waste hours and squander dollars by too little attention to saving seconds and pennies. We fail to realize that, proportionately, our failures to plan procedures properly can mean just as much in cost of paper, in transportation costs, in manpower costs, in processing time, in filing cabinets, and in building space as it does for a large operation.

Now let me go to the other extreme. As another qualification for discussing the procedures problems of small businesses, I offer myself in my present capacity as the proprietor of a small consulting organization, employing 20 people located in two different cities. When I started this business, it consisted of myself seated at a desk at home, with a telephone and a stack of letterheads. Whatever problems of procedure I had, I solved by talking them over with myself; and since my memory is good, I saw no need to write down what I decided. Gradually, as I found clients and added staff, methods became more formal. To a large extent, however, we still developed our methods on the spur of the moment, and relied on memory to record our procedures.

Later in our growth, with changes in staff, and with the need for travel, I was not always available to remember the procedures and to tell the new staff about them. Thus, we were driven by necessity to record our more important practices, for guidance of new members of the staff when the older hands were not available.

Finally, two incidents drove home the realization that it is just as important that we formalize our procedures for a small business as it is for a large one. A couple of years ago I studied the filing system of a local contractor, and dictated simplified procedures for him. Midway in the transcription of the first dictaphone cylinder, my secretary looked up and said, "Hey, boss, how about using some of these ideas for our own files?" I knew then that we were making the common error of being so concerned with telling other people how to improve their procedures, that we were failing to apply those same principles in our own business.

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"We waste hours and squander dollars by too little attention to saving seconds and pennies. We fail to realize that proportionately, our failures to plan procedures properly can mean just as much in cost of paper, in transportation costs, in manpower costs, in processing time, in filing cabinets, and in building space as it does for a large operation."

— a talk delivered at the SPA Institute meeting in Los Angeles last year.

The second incident is more recent. One of the clerks, who has been with us since early times, had to take an extended sick leave. Again we realized something we should have long known—that there was a host of procedures developed around her which would be a complete mystery to anyone else in her absence. Fortunately, the sick leave could be foreseen. As she trained her temporary replacement, we recorded the instructions, thereby automatically developing a manual of procedure on that phase of the operation. The chaos into which we would have been pitched had the girl been suddenly stricken, illustrates only too well why no business is small enough to be without a description of its procedures.

Every business has procedures. It just isn't possible to do anything without them. Even the very small operator who keeps his letters in his pockets and his books on scraps of paper has procedures. They aren't very good procedures; but they are procedures. Unfortunately, too many of our small businesses have methods which are not much better than that. Each piece of new business is dealt with on the impulse of the moment; the records are kept helter-skelter; and the files are a weird mixture of chronology, alphabet and subject matter.

We've often heard it said that there is no such thing as the indispensable man. But a small business without some kind of formal record of procedures comes very close to having one. The indispensable man in that business is the one who is thoroughly familiar with the way of doing things, but who has never bothered to tell anyone else about it. He meets all the deadlines; he fulfills all the commitments; he sees that everything is done just right, so long as he is there—but the day he fails to show up because he gets in the way of a drunken driver, is the day we realize, much too late, that the performance we expected from him as a matter of routine is forever gone; and that there is no way to reconstruct it because no one else has the information with which to do so.

There are many marks of success in business. Some measure success by the margin of profit, some by the trend of sales, some by the number of outlets, some by reputation. Without discounting or disputing any of those, I think that the mark of a successful business is that it is one in which anyone can fall out of the organization without anyone else noticing the difference. We may miss them as persons, but we should never be so dependent on the information they have in their heads that we will miss them as one of the cogs in our machine.

I've attempted to persuade small businesses to develop manuals of procedure. I confess a considerable degree of failure in getting the point across. I've heard formal procedures denounced by many small operators on several grounds. Boiled down, these arguments generally consist of the following: "If you write up a procedure, it gets complicated." "If you write up a procedure, it gets cold and impersonal." "If you write up procedures, the boss loses the personal touch with his business." "The writing of procedures takes special skills and time which can be better spent on other things."

If I were forced to bring my remarks to a conclusion at this point with a very short answer to all of these, the only suitable comment I could think of would be, "Nuts!" Procedures don't have to be complicated; they don't have to be cold and impersonal; they don't have to stand as a barrier between the proprietor and his business; and they certainly don't require any special and costly skills to develop. To some of the small businesses that continually resist all effort to formalize their procedure, I can only say that perhaps it is one of the reasons why they remain small.

Procedures come into being in three ways. Some are planned; others evolve; but most accumulate. I don't think I need to comment on the relative desirability of these three ways of getting procedures. The important point is that whether a procedure is planned, or a product of evolution, or part of an accumulation, it still ought in some way to be recorded and organized in a way which makes it available for ready reference.

We are talking about the small business, which has

been defined as one which does not have a separate organization for procedures analysis. Not having a specific part of the organization dedicated to the specific and sole task of procedures analysis, is one thing. Not having anybody in the organization at all concerned with developing an orderly system of procedures is quite another thing—and utterly inexcusable. It's poor business; it doesn't make sense; it shouldn't be allowed.

Now let's review why a small business ought to have a manual of procedures; and then see how you can best go about getting one. A small business ought to have a manual of procedures for any one or some combination. of the following reasons:

(1) Whenever a decision is made to do something, and to do it in a particular way, there ought to be a record of that decision as a reminder to everybody in the organization of what was agreed upon; and as a guide to those who join the organization later.

(2) If the main points of a procedure are committed to writing, the very act of doing that will cause enough critical review of the steps in the process that it may be possible to eliminate some of them.

(3) If a collection of procedures is reviewed by management from time to time, it is bound to show up the cases in which a need for a procedure has passed, and it can be discontinued at a saving of time and cost.

Small organizations, like large organizations, are guilty of building up procedures to prevent the repetition of a costly or embarrassing mistake which on the law of averages probably wouldn't occur again in the normal lifetime of anybody in the outfit. It would be a sound idea to require that every new procedure be checked again at the end of sixty days to see if it is still needed.

The overworked employee

Other procedures are set up to meet definite needs—but those needs pass. The procedures seldom pass at the same time, however, unless someone reviews and is critical enough to challenge the need for carrying them on. Writing a procedure, therefore, not only helps preserve it, but insures a way of challenging its need from time to time.

Sometimes a procedure is necessary, but it develops unnecessary steps. I once had an employee who asked for help, claiming she was overworked. I asked her to describe the routine in which she was engaged. She listed 12 steps. When I asked her why she did the ninth step, she told me that it was necessary to establish the facts for the tenth. When I asked why the tenth was necessary, she said it was the necessary result of the eighth. When I examined the eighth, I found it was necessary to prove the need for the ninth. In other words, the procedure was feeding on itself. It contributed nothing to the purposes of the organization; it contributed only to its own perpetuation. We ended up by reducing the twelve steps to three; and freed two-thirds of the young lady's time for more important work.

In another example, on a large scale, we wrote up and charted the flow of a procedure and in doing so, found obvious flaws in it which, when corrected, made it possible for an individual to do in twenty minutes the work that had formerly taken a day. That discovery, in a nationwide operation, made it possible to clear up a bad backlog and to divert 200 people to other, more useful work. These examples are always more spectacular when we find them in a large organization, but they are just as significant in the small one.

Writing down procedure, whether it helps us internally or not, will at least assure our customers and clients that we will deal consistently with the same kind of a problem. Even if it doesn't bother us personally that we have a different way of doing things each time—in fact, even if it entertains us to indulge in flights of fancy which change our procedures every time we take up a new problem—it may well be that such unpredictable antics will alienate those we serve, and in the end starve us out.

Procedures, policies go together

This discussion is limited primarily to manuals of procedures. But it is not possible to separate procedures from declarations of policy. Procedures are but the means by which our policies are carried out. The procedure makes sense only if the policy makes sense. I think it would be a mistake to attempt to divorce the two, partly because each needs to be considered in light of the other; and partly because it is truly a difficult task to draw the exact line between the detailed aspects of a policy and the broad aspects of a procedure.

Any manual of procedure, therefore, ought to be but a supplement to a statement of the basic policy on which these procedures depend, and which they put into effect. If that is done, then there is yet another benefit to result from written procedures, based on written policies.

It is easy to overlook inconsistencies when there is no record. It is dangerous to harbor such inconsistencies in a program which either involves rights of individuals, or which might involve the interest of clients or customers in any of our businesses. There's a strong compulsion then to reduce policies as well as procedures to writing, if for no better reason than to test our thinking on policy matters by checking against what has already been decided.

When we think of the difference between the large organizations and the small in matters such as this, we ought never to lose sight of the proportions involved. If in a large office having 100 clerical employees one clerk spends an hour a day on an unnecessary piece of work, the percentage of loss resulting from that is almost too

minute to compute. On the other hand, in a small business which has one clerk in an office, the waste of an hour a day on unnecessary procedures constitutes a 12½ per cent loss. The saving of that 12½ per cent could make a marked difference in the profit and loss statement at the end of the year.

Now, let's consider how a small organization should go about getting its procedures organized and into manual form. I want to assure you from the outset that it is not necessary to retain outside experts to come in and tear the place apart and write up a fancy and expensive set of procedures. You can do it yourself. There is no one right form in which a manual of procedures should be developed. There are a few simple standards which ought to be met, but they can be met in many different ways. The few standards which must be met are these:

(1) All procedures should be in writing.

(2) Procedures should be written in logical order so that they follow the flow of work and can be readily found.

(3) The procedures should be kept up-to-date.

(4) They should be written simply.

(5) The written procedures should be supplied to everyone who performs them.

Keep procedures up-to-date

First of all, I suppose we have to know what we mean when we talk about a "procedure." A procedure is simply a way of doing things. A written procedure is simply a description of how we do things. Writing is a form of expression with which we are all familiar. There is no problem, therefore, in writing a procedure.

Arranging the procedure in a logical and orderly fashion is the most simple and direct way of doing it. You have to work at it to make a procedure complicated. If your procedure for opening the door is to turn the knob and push, then a written procedure for opening a door need say only, "Turn the knob and push." Of course you can, if you want, complicate it by writing an involved and extended description of the operation.

Keeping procedures up-to-date is something of a problem. It can be simply solved, however, by designating some one individual in a business and making him responsible for recording every change in procedure and seeing that everyone hears about it. The easiest way to keep the manual of procedures up-to-date is to have it in loose-leaf form. The simplest loose-leaf form would be just a series of memoranda to be kept in a folder. Each page should be devoted to a particular procedure, so that sections can be corrected from time to time and the pages replaced without changing the entire folder. A simple decimal system of page numbering can be used to keep pages in the right order regardless of where you have to expand the procedure. You may reach a point where it is desirable to punch the sheets and put them in a loose-leaf binder, but that little point of formality is not significant one way or the other.

The important thing is to keep written procedure simple. A well written procedure will say directly what to do—and if necessary will explain the reason and warn against errors which might easily be made. If a procedure is written in the simple direct language which describes each step as it is to be taken, there can be no great confusion. I know of no better substitute for achieving simplicity in writing procedure than the rule that every sentence is to begin with a verb of action. "*Read* this." "*Separate* that." "*Jump* through the hoop"—whatever it is. The sentence which starts with a verb of action and which describes a single step in a procedure cannot get too involved.

You don't need a specialist

You don't have to have a specialist in procedures analysis to write up your procedures. Anybody in the organization can do it. If you want the girl who opens the mail to write a procedure for opening the mail, you might tell her to write a letter to her mother explaining what she does. She will probably write, "Dear Mama: This is how I open the mail. I face all the envelopes the same way. Then I go through to pick out personal mail. Then I slit the envelopes and take the mail out of the envelopes. If there is money enclosed, I make a note on the letter and put the money in the strong box. When I am finished, Sue takes the mail, and I don't know what happens to it after that." Now, you can take that statement, scratch off "Dear Mama" and you have a written procedure on how to open the mail. I know I've over-simplified it—but on the other hand, too many people have over-complicated it; and I think that the best way to correct an absurd situation is to reduce it to the absurdity at the other extreme.

I seriously recommend that your procedures be written first by those who perform them; and that you then have some one person edit and coordinate them into a simple manual. If the flow of the work is simply charted at the same time, it will probably show up enough duplications and overlappings to repay you for the effort.

Those who specialize in organization and procedure work for large organizations can easily demonstrate the value of their services and the savings they will produce. Without disparaging their importance to the large business I say to those of you who run small businesses that you have an equal talent in the accumulated experience of your own people. The thing for you to do is to have that accumulated experience reduced to a simple statement which will survive the memories of any member of your organization.

About Decentralization

(*Continued from page 7*)

low cost. I think that in this area of our systems and procedures work a great challenge lies ahead. It is through groups of people like this, banded together that good effective management can be developed.

Today, the Lincoln-Mercury Division, the Ford Motor Company and the greatest portions of its operations are extremely well organized. It was accomplished by dividing authority and responsibility to the greatest extent possible.

Many of us are called upon to make organizational analyses and to propose organizational programs. I don't want to leave the impression that decentralization is the answer to all organizational or administrative problems. It is far from that. While I have emphasized decentralization within the Ford Motor Company, there are areas of our business that are still centralized. For example, all legal problems are a direct responsibility of the Office of the Vice-President and General Counsel. There are tremendous advantages to centralization in this particular case.

The point that I want to make it that we must approach the subject with an open mind. We must first determine our needs and then develop an organizational plan that will meet these needs. The problems of developing and maintaining the best possible organization are ever present. Conditions change and people change necessitating modifications in organizational structure. There is no such thing as perfect organization because we humans aren't perfect and certainly organization is based upon people. It is important, then, that we temper organizational theory with an understanding of the ability of the people that make up an organization. It is much more important to have a smooth functioning group that is meeting its objectives than to have a nice looking organization chart which conforms to some theoretical pattern. The acid test of good organization in business is, of course, the amount of profit that is available to the owners. If we don't know organizational theory, we can still get by with a good logical and sensible analysis of our problems and of the people around which our organization must be built. We can be good organization analysts if we take the practical approach.

Inventory-taking

(*Continued from page 10*)

procedures are efficiently carried out by capable and competent company representatives. It is generally accepted practice for the auditor to be present at the time the physical units are counted and, by personal observation supplemented by test checks of actual counts, and by other means, to gather first hand evidence as to the accuracy of the number of units of each item as recorded for inventory purposes. Considerable evidence is usually required to satisfy the auditor as to the proper basis of valuation. This evidence must be developed and retained for later inspection by Government auditors and for other purposes, as well as for the outside auditor, if the resulting inventory valuations are to serve all of their desired purposes. The evidence included on the priced inventory sheets, supplemented by the record of the count of physical units, and other evidence as to prices, etc., is usually suitable for verification purposes by the outside auditor.

To summarize, the company staff can best cooperate with the outside auditor, in the matter of inventories:

(1) by developing and reducing to writing satisfactory inventory policies and procedures;

(2) by making these written policies and procedures available to the outside auditor prior to the actual count;

(3) by making it possible for the auditor, or his representatives, to be present at all important locations at the time the physical count is made;

(4) by developing and retaining and making available to the auditor reasonably conclusive evidences as to the basis used in valuing inventories; and

(5) by making available to the outside auditor the final inventory sheets, or their substitute records, supported by such evidence as may be required to verify them properly.

New Horizons

(*Continued from page 13*)

tion of the machine and the individual card is punched. If it is necessary the function can be reversed, the card being used to punch tape which can then be transmitted over the wire through a transmitter.

The use of the I.B.M. machines, together with the up-to-the-minute information afforded through use of the telegraph advices, enables the Air Materiel Command to have at its finger tips complete control of air equipment and to speedily direct filling of orders, wherever they may be from, or wherever they may be destined. For obvious reasons, I did not inquire too closely into this phase of operations, but what I have recited conforms pretty closely to the general pattern. And to illustrate the tremendous scope of this system, the switching center in Dayton, in the first six months of operation, switched 1,503,689 messages aggregating 225,553,350 groups, or words. You can well imagine what the total must have been for the entire network.

(To Be Concluded in June)

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